<u>**AMENDMENTS TO THE CLAIMS**</u>

The following listing of claims will replace all prior versions and listings of claims in the application.

<u>**Listing of Claims:**</u>

1.   **(Currently Amended)**   A temperature compensation system for a laser, the temperature compensation system comprising:

a laser driver having a first potentiometer <u>and a second potentiometer</u>, the laser driver configured to provide a first signal to a laser based on a resistance value of the first potentiometer;

an optical communication analyzer configured to provide a second signal indicative of a first output parameter of the laser; ~~and~~

<u>the laser driver configured to provide a third signal to the laser based on a resistance value of the second potentiometer;</u>

<u>the optical communication analyzer configured to provide a fourth signal indicative of a second output parameter of the laser; and</u>

a computer system configured to drive the first signal and receive the second signal and determine a first updated resistance value for the first potentiometer to obtain a first desired laser output parameter value based on a first known resistance value of the first potentiometer, the second signal, and the first desired laser output parameter value <u>and to drive the third signal and receive the fourth signal and determine a second updated resistance value for the second potentiometer to obtain a second desired laser output parameter value based on a second known resistance value of the second potentiometer, the fourth signal, and the second desired laser output parameter value</u>.

2.   **Cancelled**

3.   **(Currently Amended)**   The temperature compensation system of claim [[2]] 1, wherein the first signal comprises a bias current signal and the third signal comprises a modulation current signal.

4.   **(Currently Amended)**   The temperature compensation system of claim [[2]] 1, wherein the first output parameter of the laser comprises an average power and the second output parameter of the laser comprises an extinction ratio.

5.   **(Currently Amended)**   The temperature compensation system of claim [[2]] 1, wherein the first desired laser output parameter comprises an average power and the second desired laser output parameter comprises an extinction ratio.

6.   **(Currently Amended)** A computer system comprising:

a memory storing a temperature compensation program; and

a processor, which executes the temperature compensation program instructions to:

select a first resistance setting for a first potentiometer for controlling a bias current of a laser diode;

receive a measurement of an average power of the laser diode; ~~and~~

calculate a second resistance setting for the first potentiometer based on the first resistance setting for the first potentiometer, the measurement of the average power, and a desired average power;

select a third resistance setting for a second potentiometer for controlling a modulation current of the laser diode;

receive a measurement of an extinction ratio of the laser diode; and

calculate a fourth resistance setting for the second potentiometer based on the third resistance setting for the second potentiometer, the measurement of the extinction ratio, and a desired extinction ratio.

7.   **Cancelled**

8.   **(Original)**   The computer system of claim 6, wherein the processor executes the temperature compensation program instructions to set the temperature of the laser diode to a selected value.

9.   **(Original)**   The computer system of claim 6, wherein the processor executes the temperature compensation program instructions to store the second setting in the memory.

10.   **(Currently Amended)**   The computer system of claim [[7]] 6, wherein the processor executes the temperature compensation program instructions to store the fourth setting in the memory.

11.   **(Currently Amended)** A method for compensating for temperature variations of a laser diode comprising:

selecting a first resistance setting for a first potentiometer for controlling a bias current of a laser diode;

measuring an average power of the laser diode; and

calculating a second resistance setting for the first potentiometer based on the first resistance setting for the first potentiometer, the measured average power, and a desired average power;

selecting a third resistance setting for a second potentiometer for controlling a modulation current of the laser diode;

measuring an extinction ratio of the laser diode; and

calculating a fourth resistance setting for the second potentiometer based on the third resistance setting for the second potentiometer, the measured extinction ratio, and a desired extinction ratio.

12.   **Cancelled**

13.   **(Original)**   The method of claim 11, further comprising:

setting the temperature of the laser diode to a selected value.

14.   **(Currently Amended)**   The method of claim [[12]] 11, wherein the first potentiometer is a first digital potentiometer and the second potentiometer is a second digital potentiometer.

15.   **(Currently Amended)**   The method of claim [[12]] 11, further comprising:

installing the laser diode in a transmitter; and

storing the second resistance setting for the first potentiometer and the fourth resistance setting for the second potentiometer to a memory of the transmitter.

16.   **(Currently Amended)** The method of claim [[12]] 11, further comprising:

installing the laser diode in a transmitter;

selecting a first thermistor of the transmitter based on the second resistance setting for the first potentiometer; and

selecting a second thermistor of the transmitter based on the fourth resistance setting for the second potentiometer.

17.   **(Currently Amended)** The method of claim [[12]] 11, wherein calculating the fourth resistance setting for the second potentiometer comprises the following equation:

$$R_2 = \left(\frac{10^{ERdB\,2/10} + 1}{10^{ERdB\,2/10} - 1} \right) \bullet \left(\frac{10^{ERdB\,1/10} - 1}{10^{ERdB\,1/10} + 1} \right) \bullet R_1$$

where

R_2 is the fourth resistance setting for the second potentiometer,

R_1 is the third resistance setting for the second potentiometer,

$ERdB_2$ is the desired extinction ratio in dB, and

$ERdB_1$ is the measured extinction ratio in dB.

18.   **(Original)** The method of claim 11, wherein calculating the second resistance setting for the first potentiometer comprises the following equation:

$$R_2 = \frac{P_{1ave}}{P_{2ave}} \bullet R_1$$

where

R$_2$ is the second resistance setting for the first potentiometer,

R$_1$ is the first resistance setting for the first potentiometer,

P$_{2ave}$ is the desired average power, and

P$_{1ave}$ is the measured average power.

19. **(Currently Amended)** A computer readable medium for use in a computer system comprising:

a computer readable program code means for causing a computer to:

select a first resistance setting for a first potentiometer for controlling a bias current of a laser diode;

receive a measurement of an average power of the laser diode; ~~and~~

calculate a second resistance setting for the first potentiometer based on the first resistance setting for the first potentiometer, the measurement of the average power, and a desired average power;

select a third resistance setting for a second potentiometer for controlling a modulation current of the laser diode;

receive a measurement of an extinction ratio of the laser diode; and

calculate a fourth resistance setting for the second potentiometer based upon the third resistance setting for the second potentiometer, the measurement of the extinction ratio, and a desired extinction ratio.

20. **Cancelled**

21. **(Original)** The computer readable medium of claim 19, wherein the computer readable program code means comprises code means for causing a computer to:

set the temperature of the laser diode to a desired value.

22.   **(Original)**   A fiber optic transmitter comprising:

a laser;

a first potentiometer for controlling a bias current of the laser; and

a second potentiometer for controlling a modulation current of the laser,

wherein a first value of the first potentiometer is set for a specific temperature by:

selecting a second value for the first potentiometer;

measuring an average power of the laser; and

calculating the first value for the first potentiometer based on the second value for the first potentiometer, the measured average power, and a desired average power;

and wherein a third value of the second potentiometer is set for the specific temperature by:

selecting a fourth value for the second potentiometer;

measuring an extinction ratio of the laser; and

calculating the third value for the second potentiometer based on the fourth value for the second potentiometer, the measured extinction ratio, and a desired extinction ratio.

23.   **(Original)**   The fiber optic transmitter of claim 22, wherein the first potentiometer is a first mechanical potentiometer and the second potentiometer is a second mechanical potentiometer.

24.   **(Original)**   The fiber optic transmitter of claim 22, wherein the first potentiometer is a first digital potentiometer and the second potentiometer is a second digital potentiometer.

25.   **(Original)**   The fiber optic transmitter of claim 24, wherein a first position of the first digital potentiometer is stored in a memory of a transmitter and a second position of the second digital potentiometer is stored in the memory of the transmitter.

26.   **(Original)**   The fiber optic transmitter of claim 22, wherein the first value of the first potentiometer is stored in a memory of a transmitter and the third value of the second potentiometer is stored in the memory of the transmitter.

27.   **(Original)**   The fiber optic transmitter of claim 26, wherein the memory is an electrically erasable programmable read-only memory.

28.   **(Original)**   The fiber optic transmitter of claim 22, wherein the laser is a laser diode.